

**Bureau of Apprenticeship Standards**  
**Industrial Electrician Apprenticeship**  
**Electrical & Instrumentation Committee**

**Revised 05/31/2013**

**O\*Net Reference Code: 47-2111.00 – Electricians**  
**DOT Code: 829.261-018**

**Wisconsin Apprenticeship Program:** The Industrial Electrical program is a four-year apprenticeship program of not less than 8,320 hours to include 720 hours of Paid Related Instruction. In addition to the paid related school attendance, the apprentice shall complete the Standard Red Cross First Aid and CPR courses during the first year of the apprenticeship. Certification will be maintained throughout the apprenticeship. An apprentice in his/her final year must satisfactorily complete the Transition to Trainer course.

### **Work Description**

Industrial Electricians safely install, service and troubleshoot equipment, and perform preventative and predictive maintenance functions. This includes plant lighting equipment, distribution circuits and transformers; motors, starters, and motor control centers; programmable logic controllers, computer-based controls, control panel, and electrical control systems. They may service high voltage electrical systems. They ensure that work is in accordance with relevant codes.

### **Working Conditions**

Industrial Electricians work in industrial manufacturing, including paper and wood mills, food processing, printing, breweries, electronics, metal fabrication, and a variety of other industries. Electricians must be able to stand for long periods of time and work in cramped or uncomfortable positions and on ladders and lifts. They often work with hands above head, in confined spaces and in a variety of conditions and temperatures, both hot and cold. They use personal protective equipment to avoid common hazards, such as high-voltage suits and gloves, safety belts, protective glasses and/or hard hats

### **Tasks**

- Electrical Construction, including: installation of conduit and wiring for power distribution and lighting; panel building; installation of conduit and wiring for machine and equipment controls; layout, planning and installation of control systems including programmable controllers, drives, servo systems, etc.; installation of communication and data systems.
- Electrical Maintenance: maintain, trouble shoot, repair and/or replace the following items: power distribution and lighting systems, including substations; industrial machinery and equipment, such as motors and transformers, electronic controls (CNC Power Distribution and lighting systems, PLC logic systems), material handling equipment (cranes, conveyors, machine tools and robotics; general plant equipment, such as HVAC, compactors, automatic doors, air compressors, generators, cranes, conveyors, loading dock equipment, boilers and controls. This also includes the effective use of electrician's tools (hand, power, electrical and electronic test equipment). [Perform scheduled preventative](#)

maintenance tasks, such as checking, cleaning and repairing equipment to detect and prevent problems.

- Install and maintain high voltage equipment (anything above 600 volts); Circuit design and drafting; Schematic and/or blueprint reading.
- High voltage training, including proper use of personal protective equipment; Safe use of hand tools, power tools, electrical and electronic test equipment.
- Communicate effectively with equipment operators to troubleshoot equipment problems and determine root causes.
- Utilize work order management systems effectively.

## Knowledge

**Computer:** Knowledge of basic computer functions and applications.

**Level of Educational Attainment:** Possess high school diploma, General Equivalency Diploma (GED), or high school equivalency certificate

**Mathematics:** Knowledge of arithmetic, algebra, geometry, and their applications.

**Mechanical:** Knowledge of tools, including their uses and maintenance.

**Public Safety and Security:** Knowledge of relevant equipment, high pressure safety, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions, including OSHA regulations, Environmental Protection Agency (EPA) regulations and Department of Transportation (DOT) regulations.

## Skills

**Active Listening:** Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

**Communication:** Oral and written with an emphasis on understanding verbal instructions, written sentences and paragraphs in work related documents.

**Time Management:** Managing one's own time and the time of others.

**Troubleshooting:** Determining causes of operating errors and deciding what to do about it.

## Abilities

**Arm-Hand Steadiness:** The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.

**Manual Dexterity:** The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.

**Near Vision:** The ability to see details at close range (within a few feet of the observer).

**Problem Sensitivity:** The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.

**Reasoning:** The ability to apply general rules to specific problems to produce answers that make sense. The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).

**Trunk Strength:** The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.

**Visual Color Discrimination:** The ability to match or detect differences between colors, including shades of color and brightness.